Harriot's embankment in the 4th vol. of the Society of Arts (which has been inserted in our 24th number) and declaring that it was this led him to engage in the work, which but for it he would probably have never attempted.

Observations...The circumstance in this paper, which seems most to deserve being pointed out to the attention of the gentlemen who may have similar works in contemplation in this kingdom, is the construction of the large trough for conveying the water of the brook through the bank. Where a trough can carry off the water of a stream, it is evidently a less expensive mode of conveying it through the new enclosure, than that of constructing banks at each side of the stream up to the high ground. In the extensive flats in the vicinity of Belfast, which will in a few years be secured from the sea, if the meritorious example set here in this respect by Mr. May, and Mr. Thompson (who lately have so happily succeeded in rescuing near 100 English acres altogether from the waves) be followed as it deserves, several instances will occur where the above information may be useful; as numerous small brooks traverse those flats, which may be easily and cheaply passed through the sea bank in troughs, but which it would be very expensive to embank at both sides. The space left between the bank and the ditch also deserves to be noticed, on account of the security which it gives the bank, as does also the slope given to the bank internally, as well as externally. Mr Quayle's candid acknowledgment of the advantage he derived from Mr. Harriot's papers, which concludes his communication, does him so much more credit, as many from a mean and unjust pride pursue a contrary system, and while they avail themselves of the thoughts of others, pretend they acted from old conceptions of their own; but dates and other facts in general betray their furtive pretensions, and expose them to deserved ridicule.

Scheme for preserving the Lives of persons Shipwrecked; by G. Cumberland, esq

Phil. Journal, xxvii. 134.

A few years ago Mr. Cumberland, residing near the sea, at a place called Weston Super Mare, frequently observed extensive masses of the sea weed called tang, which the farmers burn for manure, floating into the hollow coves, on the surface of the most tremendous waves; and forming as it were, a green carpet, that undulating on the broken waves was never submerged, although continually varying its surface; and on which, as on a resting place, birds frequently alighted, or sat to repose themselves, as if on a verdant down.

On a coast so remarkably dangerous, where no boat could land even in comparatively tranquil weather, these *safe rafts* seemed very interesting, and led Mr. Cumberland to the thought, that a raft of this nature might be constructed of other materials, fit, instead of birds to carry men. The result of this was, that it appeared to him, that if each sailor in a man of war had a mattress of cork shavings, and that these mattresses were all linked together by cords, a float capable of landing men safely, even on breakers, would be produced.

Mr. Cumberland on going to Bristol to consult a cork-cutter relative to these mattresses, found that a very moderate weight of cork would support a man, and that cork shavings were then worth only eightpence per bushel, and were sold chiefly for firing, or to make guards for privateers to fill the nettings.

From this it therefore seemed manifest to Mr. Cumberland, that as mattresses are necessary in the navy for the hammocks, and as nothing is dryer than cork, or easier to shave into a thin elastic body, good mattresses might be made of this substance, in a proportion equal to support the weight of a man, and that a mass of them thrown overboard linked together by ties at each corner, where cords might be always attached, would form an extensive raft, cap-

able of sustaining out of the water an equal number of men; and of conveying them on the tops of the waves, and depositing them safely on shore, or even on the surface of rocks, when the sea retired with the tide.

Rafts of this nature seem to Mr. C. to be much the best, because all others that he had heard of, have this great defect, that they come on shore with too much force, and that the blows they receive either disjoint them, or throw off the people; that their wrecks are more dangerous than the rocks they strand on; and that every time they pitch those on them are covered, some of which never may be able to retain their hold or to rise again.

Mr. Cumberland thought it a duty to humanity to lay this project before the admiralty, as with them the power of putting it extensively into practise chiefly exists, but as they did not even think fit to acknowledge his letter on the subject, we must conclude that they have treated it with the same neglect, with which they almost always treat proposed improvements, if not originating among themselves, or backed by irresistible patronage.

An Account of the Method of manufacturing Salt at Moutiers, in the department of Mont Blanc, by M. Berthier, Mine Engineer.

Continued from p. 216, *No*, XXVII.

As the rope shed is used one part of the year for collecting the salt, and even when used for graduation, it does not receive any brine weaker than 14°, the cords last a long time. There still remain three fourths of those that were put up fifteen years ago, so that it is probable that the whole will not want renewing in less than fifty years.

A boiler lasts fifteen or even eighteen years if it be taken care of, and the scales are not allowed to grow too thick, but are knocked off every twelve or fifteen boilings, in order to repair the bottom.

The persons employed are, a director, who corresponds with the committee; a general overseer; an overseer of the springs and buildings; a foreman of the boiling house; a storekeeper and salesman; several clerks, graduators; boilers, three to each furnace; carpenters, smiths, labourers, porters, wood-renders, carmen, &c. in all about 112 individuals, almost all of whom receive monthly salaries.

The salt is sold at one franc 60 cent. (16*d.*) *per* myriagramme (20lb.) The sulphate of soda accumulates in the warehouse, and is sold for whatever the buyer will give for it. The glass-houses at Anneey buy some of the last schelot and scales, but at a very low price; so that the salt is the only productive substance, and yields 160,000 francs (about 6,666*l.*) a year. The expenses are 30,000 fr. (1500*l.*) for 7000 steres of billet-wood, and 8000 fr. (333*l.* for purchasing iron, building materials, &c. besides the wages of the persons employed.

If the brine were evaporated immediately from the spring, it would require seventeen steres of wood to obtain ten myriagrammes of salt, the value of which would not be more than a quarter of the cost of the fuel. It is therefore absolutely necessary to graduate the brine. The manner in which this is done has been described above; but some other trials have been made to obtain the same end, of which hereafter. In whatever manner, however, the brine is concentrated, the free exposure of it to the air is inevitable; and from this circumstance there results a very great inconveniency, which has not as yet been attempted to be removed. This inconveniency consists in formation of the sulphate of soda, which takes place in consequence of the reciprocal decomposition of muriate of soda and sulphate of magnesia when the temperature is near the freezing point. This effect is certain: it is agreeably to the well-known principles of chymistry, and has been particularly observed at Moutiers. It is there known that in cold weather the salt that is obtained is less pure than at other times, and that the mother water is then more abundant on account of the muriate of magnesia being augmented in quantity. When this decomposition is complete, which perhaps takes place in the coldest days of winter, the brine will contain for every 100 parts of muriate of soda, as far as 22 of sulphate of soda, and